COLOUR OPPONENT PROCESS

Aura Satz

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Colour Opponent Process is the name of Ewald Hering's theory of colour perception. All colour sensations arise from the combination of red, green yellow and blue, but these are perceived antagonistically by the eye's colour opponent cells, which treat the four colours as two pairs of opposing colours. If the eye is excited by red, then green is inhibited. Yellow is the afterimage of blue, but cannot appear with it. The parts of the eye that perceive colour are attuned to perceive only one of the colours in the pair at once. Colour perception happens antagonistically.

Used as the exhibition's title, it resonates with colour's various implications in opposition and antagonism. For one, there are the ways in which colour has played contradictorily across the opposition between artifice and reality. In one moment, colour film is the stuff of fantasy, over the rainbows and illusion. In another, colour makes film into a truly documentary form, for the actual colours of history are absorbed and projected in it and seem to bring history 'to life'. Colour is both real and fantastic. Colour is just a coating or it is the body of the thing itself in all its hues. These polar views of colour as dreamlike and as lifelike have been flung around by chromophobics and chromophiliacs alike and annexed to questions of taste, kitsch, artfulness and quality, 'primitivism', and sophistication.[1] Fear of colour emerges periodically, associating it with the infantile, the oriental, feminine, vulgar, or any other such subaltern element. It is condemned as excessive and contaminating. Colour lures its viewers into the irrational. But, from another perspective and in another moment, the production of colour and its mastery in application is seen as evidence of the progress of science and the development of aesthetic sensibility.

Colour in film, known best in its commercial-industrial guise as Technicolor™, was excoriated by critics in its early days. In 1936, an article in *American Cinematographer* condemned colour as obtrusive, for it eclipsed the drama: 'Colours perform strange tricks at the most unexpected times and for no apparent good reason. One may suddenly

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[1] For some of these perspectives, see David Batchelor *Chromophobia* (London: Reaktion, 2000), an exploration of the various ways in which colour is perceived as dangerous or trivial or both and 'other to the higher values of Western culture'. See also Michael Taussig, *What Colour is the Sacred?* (Chicago: University of Chicago Press, 2010), on colour's association with the 'primitive'.

decide to stand up and cheer or roll over and play dead. And the perverse little devil usually does it at just the wrong time'.[2] Colour appears to be too visible, a malevolent, autonomous actor disturbing the story on screen. At best, it might be limited to portions, bracketed off as pleasant refreshment for the eyes. But Technicolor was not banished from the movies. It clung to the screen, while the cities blazed everywhere with new synthetic colours, and colour appeared to have become a compulsion.[3]

If it could not be banished, then it needed to be tamed. Natalie Kalmus, an important reference for this exhibition, battled in her role as Technicolor colour advisor to rein in colour's perceived excesses and to establish the proper, tasteful use of colour. A controversial figure who, by all accounts, seeded conflict everywhere, she drafted colour rules that held sway for some years. Her manifesto text 'Color Consciousness' (1935) argued that the advent of colour was the last stage in film's ability to 'duplicate faithfully all the auditory and visual sensations' in an 'enhanced Realism'.[4] But duplicating reality is inadequate. Film is the artform of the twentieth century and must deploy colour not as a documentary record, but as a part of its creative translation of the world.

Kalmus countered the extent to which colour, vector of fantasy, appeared to be a matter for scientists and not part of the craft of filmmaking. Colour needed aesthetic rules, adhered to by colour artists, and viewers needed to develop a 'colour sense'.[5] Kalmus recommended the following rules in order to downplay the oppositionality inherent in colour: colour should coordinate with the mood or tone of dramatic action; the use of excessively bright or saturated colours should be avoided in favour of more harmonious, 'natural' and less intense colour schemes, lest they exert an unpleasant effect on the eye and mind; warmer and brighter shades should emphasise only important information pertaining to the narrative – otherwise neutrals should be used; the *mise en scene* should be co-ordinated to avoid distracting juxtapositions. Kalmus' conception of colour emphasized harmony - wrought from the antagonism that is colour. The reference was musical and the film was to be scored for colour. Thereby it evoked a long-standing association of musical scales and colour scales, as well as numerous experiments in relaying between musical tones, emotional tones and visual tones.

Colour blares from the screen and it elicits reactions. It has done so from the very beginning. Films from the 1890s, some of the first film strips that exist, are paeans to the glories of colour: swirling skeins of vibrantly coloured, ever-changing chiffon are twisted by girls performing butterfly and serpentine dances. These virtually abstract films accounted for around one third of films made in the first twenty years of cinema. All of the 'fathers' of cinema made this type of film: Edison, Dickson, Louis Lumière and Paul Nadar. The colours were applied to each film frame by hand.

Colour's workings on the eye are the result of work, first by the hand and then by machines too. In 1980, the filmmaker and theorist Peter Wollen, in the grip of Structuralist film phrases, observed that there is no direct link between the colour of the

[2] Cited in Scott Higgins, 'Technology and Aesthetics: Technicolor Cinematography and Design in the Late 1930s', *Film History*, Vol. 11, No. 1, Film Technology (1999), pp. 55-76: p. 57.
[3] See Regina Lee Blaszczyk, *The Color Revolution* (Cambridge, MA: The MIT Press), 2012, p. 191ff.
[4] Natalie Kalmus, 'Color Consciousness', *Journal of The Society of Motion Picture Engineers*, no. 2, August 1935, p. 140.
[5] Ibid.

natural world and the colour of the projected color film. Indeed, `a whole technology of dyeing has intervened'.[6] Moments in the history of technologies of dyeing are indicated in Aura Satz's exhibition. For one, there is the orange cloud of fire laid on by semi-mechanized stenciling in *Joan the Woman - With Voice*, a series of three photographic lightboxes showing the final moments of Cecile B. deMille's 1916 silent feature. Here is an inaugurating event in a history of colouring technologies that couple human labour to machinic labour. As emblem of this, Joan the woman slips into the background, into the medium itself, its colour obscuring and blotting out, while a buzz of noises chatters around her.

Elsewhere in the exhibition colour is brought into view in the lamp house of a 35mm Technicolor film printer or laid out as bars of colour on a score, such as Kalmus made, pegging film colours to dominant moods or emotions, and thereby turning not simply the film into an instrument, but the viewer too. It and we are played. Humans and machines are often conceived as oppositions, but colour streams between them. The sounds of the mechanism in *Doorway for Natalie Kalmus* emphasize the annexing of human and machine, their yoking and their opposition. Machines make colour in the cinema, conveying it across space. The human eye sees colour, but it generates it too, in the eye. But *who* made the colour?

Technology has its technologists, which means large workforces of colour makers, fixers, appliers, wipers, developers, correctors etc. The colourful world of dreamy confection is predicated on the dull, grey world of labouring for colour, labouring to make colour, process it, capture it, distribute it, classify it. Colour work has often had a female dimension. There was Kalmus, of course. But there have been other women who found a leading role in the production or organization of colour. Mary Hallock Greenewalt with her mobile colour machineries for theatre and cinemas was one, for which she received eleven patents between 1920 and 1934, including one for a portable light and music phonograph for the home.[7] Greenwalt insisted that to each feeling there corresponds a colour and she called her art of playing with these Nourathar. There was also the colour forecasting of Margaret Hayden Rorke, managing director of the Textile Color Card Association of America from 1919 to 1954, which aimed, to educate the public to a `color sense' and standardize the names of the season's fashionable colours. These were the `high priestesses' of colour.[8] But not the least part of female colour work was in the factories where colour was processed for film and photography. At Pathé's and Gaumont's factories in the 1910s and `20s, hundreds of women used pantographs and needles to make stencils for film prints, which could then be coloured *en masse*.

In the 1930s and 1940s, one of Technicolor's great commercial and ideological rivals was Agfacolor in Germany. At its colour film processing factory in Wolfen, in the Third Reich, as subsequently under the rule of the German Democratic Republic, women were the workers. (The female prisoners from Ravensbrück concentration camp who carried out

[6] Peter Wollen, `Cinema and Technology: A Historical Overview', in Eds. Teresa de Laurentis and Stephen Heath, *The Cinematic Apparatus*. (New York: St. Martin's Press, 1980), p. 24.
[7] There is plentiful material on Greenewalt's life and work on the website of The Historical Society of Pennsylvania. http://hsp.org/sites/default/files/legacy_files/migrated/findingaid0867greenewalt.pdf (accessed January 10, 2014)
[8] `High Priestess' was screenwriter Arthur Laurents's sarcastic name for Kalmus, in his account of her conflicts with Alfred Hitchcock when working on *Rope*. See Arthur Laurents, *Original Story By, A Memoir of Broadway and Hollywood* (New York: Alfred A. Knopf, 2000), p. 134.

forced labour at the factory are part of this female tradition.) Colour film photographers of the Third Reich framed in Agfacolor the bright blue skies, the blond hair, the fair skin, the yellow corn in the fields, the smiling workers, the girls playing in the sunshine, at ease with their slim Aryan bodies, the flag-draped institutions of the city. All this comes to be a visible, multi-coloured truth of the harmony of this Nazi-German world. But the colours are dreamt up, not in a dreamily free-floating sense, but rather pegged to the colours of ideology. That the photographed swastika be perfectly, standardly, red was no small part of the colour work of the Third Reich.

Colour produced by labour, a labouring that permanently stains the hands and insists its minions work in near-darkness, is received by its audiences as the antithesis of what made it. It comes to audiences as evanescent light. It is transient and transcendental. In *Doorway for Natalie Kalmus*, the colour spills out from the screen. It bathes us for as long as it hangs around. It kisses the eye and skin and flies on. It puddles on the ground and evaporates. It is an ungraspable substance of desire and our lust is annexed to the machinery that produces and destroys it. In *Joan the Woman - With Voice* colour is laid on, escaping the edges of what the colourist aims to paint, roughly marking out an experience, a hint but not an actuality. Colour parsed through the glass of the lens produces chromatic aberrations, in fringing, in blooming, imperfect registrations. Hence an industry of correction arranged in response to this anarchic beast. Standardization battles with instability.

Colour Opponent Process speaks not to the nostalgic passing of analogue and chemical technologies and the fact that electronic media finds it difficult to achieve Technicolor's colour saturation. Or better, it evokes not only that and the end of a previous age of cinema, but also the chromothesia that has newly invaded our lives. Contemporary touchscreen technologies – the merging of eye and hand – and the saturation of our environment with images, colours, sounds, stimulations re-focus on how colour segues with questions of life, labour, listening, memory, self-formation, production and aesthetic experience. Daily we experience colourful liquid crystals dancing at our fingertips before eyes that are rarely averted. Here in Aura Satz's exhibition the flashes and puffs of colour work to make the artwork a vehicle of sensation, bright and suffusing, as much as it is also the product of and the vehicle to conceptual labour, reflecting as it does, like Paul Sharits's filmwork before it, on the material elements of reproduction – the projector, the environment, the light, the soundtrack, the screen, and duration. Thereby it unites - or sets in proximate opposition - the emotional and the cognitive realms. Kalmus's advocacy of art - and Technicolor - as the tasteful cultivation of the senses elicits an emphatic negation. Here at *Doorway for Natalie Kalmus* the senses are flooded with pure and intense colour, with colour direct from its source in the machine, colour without alleviation, colour broken free of narrative. The 'colour sense' demands not a sensibility, but an adequate organ of the body-mind that might go up against it.

In *Colour Opponent Process* colour appears always as something else. It stands in opposition to itself. Colour is liquid. Colour is light. Colour moves. Colour covers. Colour highlights. Colour gives shape. Colour is made by machinery and chemicals. Colour is made in the eye. Colour is consumable. Colour is work. Colour cultivates. Colour wipes out. Aura Satz lets us stand in its doorway, its portal to somewhere else, to itself.

ARTIST BIO

The work of Aura Satz encompasses film, sound, performance and sculpture. In recent years she has made a collection of films that look closely at sound visualisation through various technologies and acoustic devices such as the Chladni plate, the Ruben's tube, the theremin, mechanical music, phonograph grooves, and drawn/optical sound. Her films engage with the materiality of these technologies and the resulting sound patterns - codes in the act of formation - and how these destabilise paradigms of writing and readership. The camerawork tends to pore over its subject, zooming in visually and acoustically until it becomes abstracted in scale and context, and reconfigured to evoke a new anatomy or landscape of sorts -an architectural structure, or a writing system. The film narratives often explore the more metaphorical, literary and cinematic associations, whilst the visuals provide an intimate encounter with archaic and obsolete sound technologies, exploring their de-familiarized sculptural and tactile qualities, and revealing new ways of thinking about sound. She is particularly interested in technologies, which are on the cusp of invention or obsolescence, at the point in time when their purpose, their ergonomic relationship to bodies, and the ways in which they might be modelled on physical or psychic human functions are at their most unstable.